E3/17-535

Canon

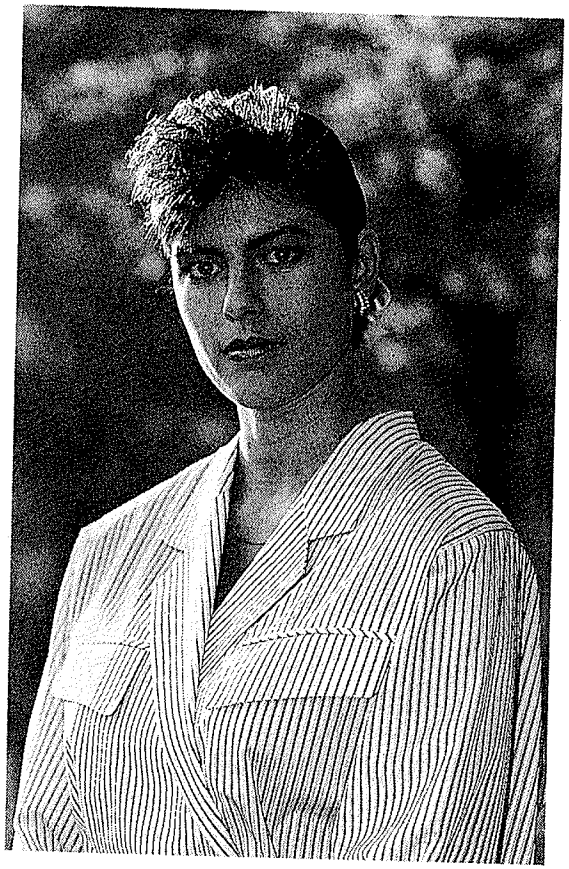
Speedlite 420EZ

E

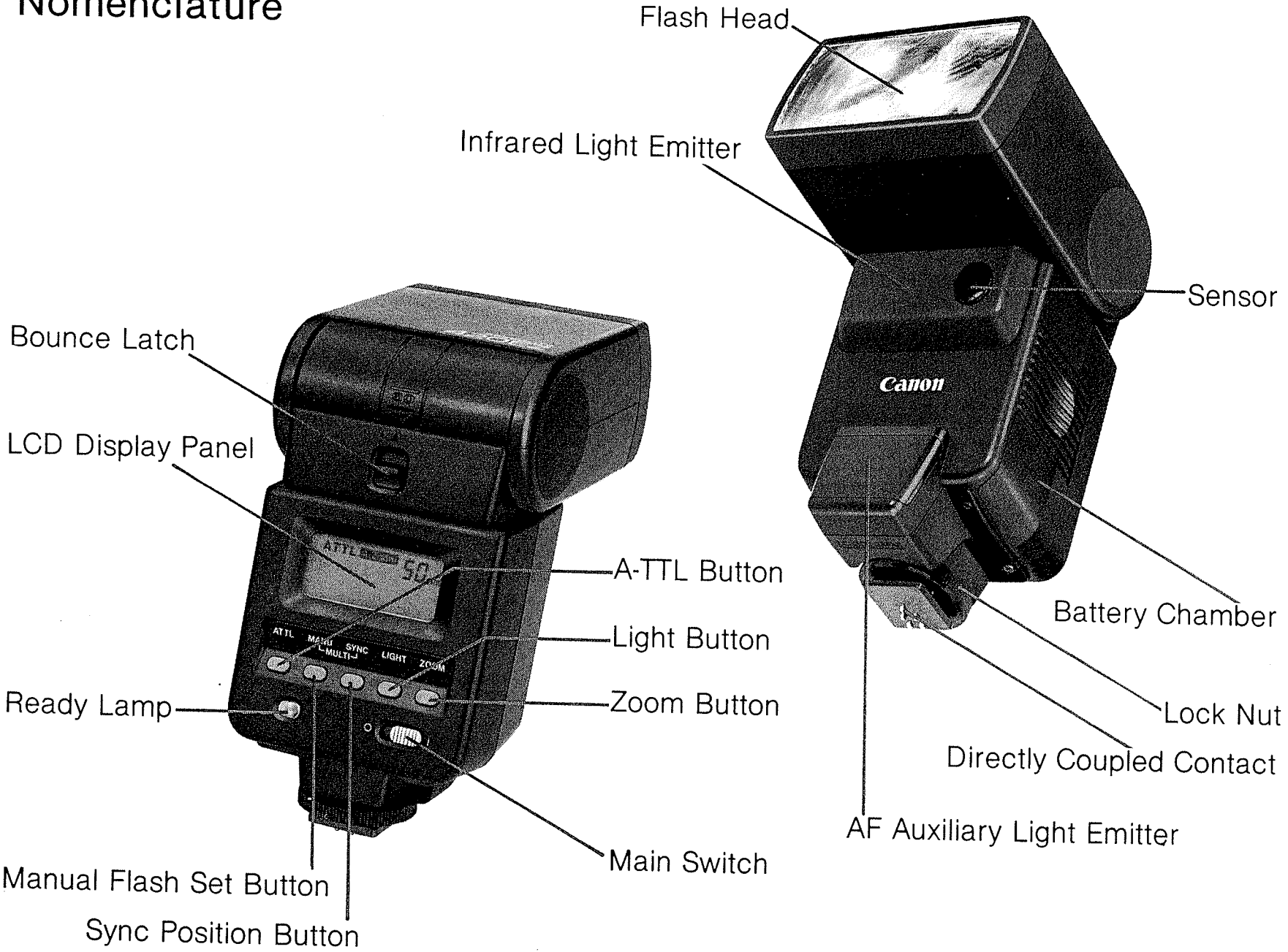
INSTRUCTIONS English Edition

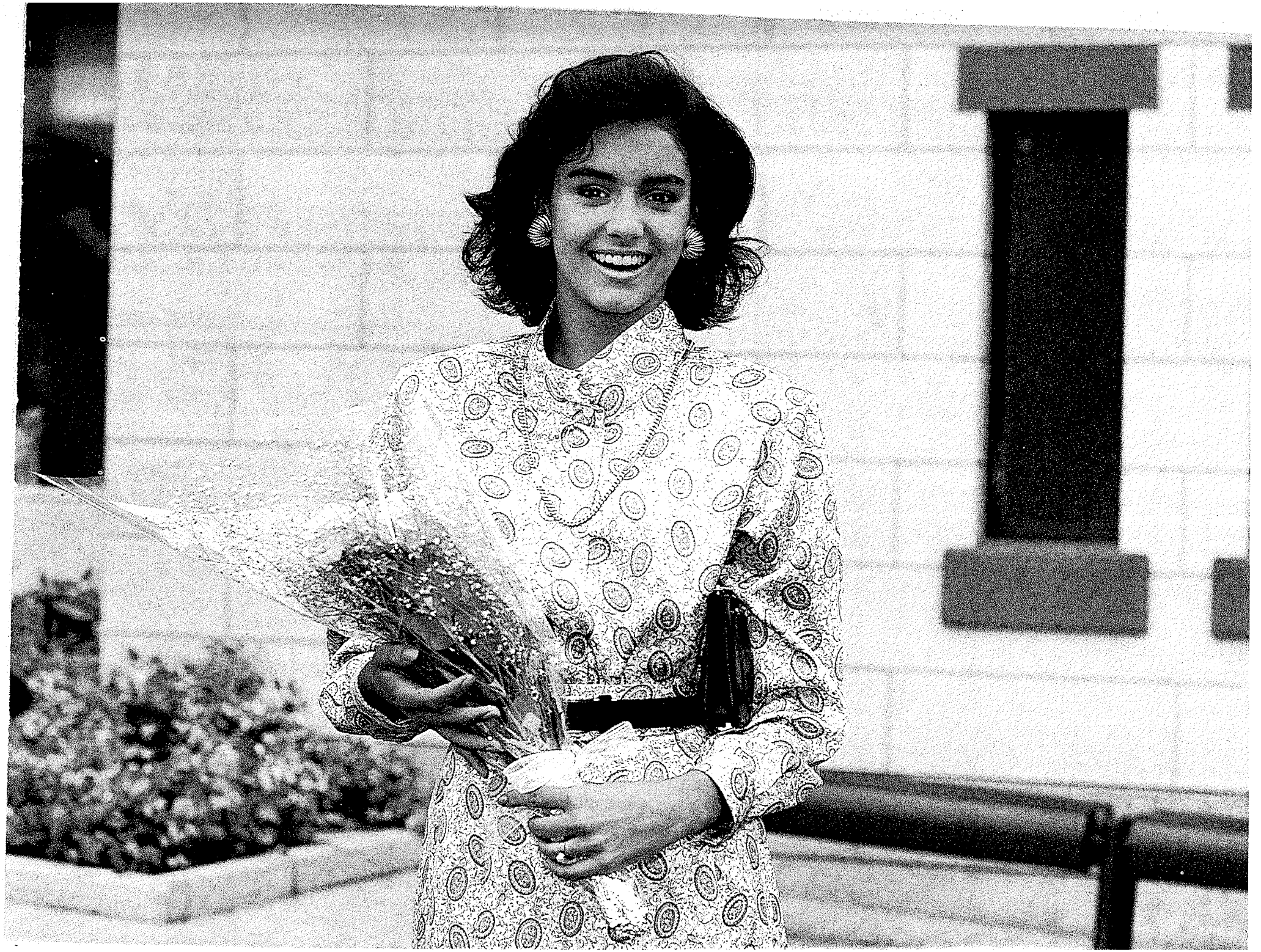
Especially designed for EOS cameras, the Canon Speedlite 420EZ is a high-performance, electronic flash unit featuring the A(Advanced)-TTL automatic flash output control, which responds to a wide range of illumination from dark surroundings to bright (fill-in flash) without troublesome operations. Advanced techniques such as bounce and slow-sync flash photography can be used in the automatic mode. In addition, the large, easy-to-read LCD display enables you to check shooting information. Please read this instruction booklet carefully for a full understanding.

- The Speedlite 420EZ is sold in both "meter" and "feet" display versions, but product availability may vary from area to area.



Nomenclature





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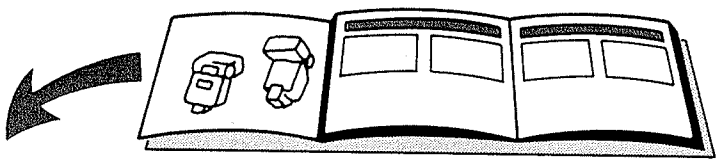

For easy reference to the Speedlite's parts, please unfold the front flap of this booklet.

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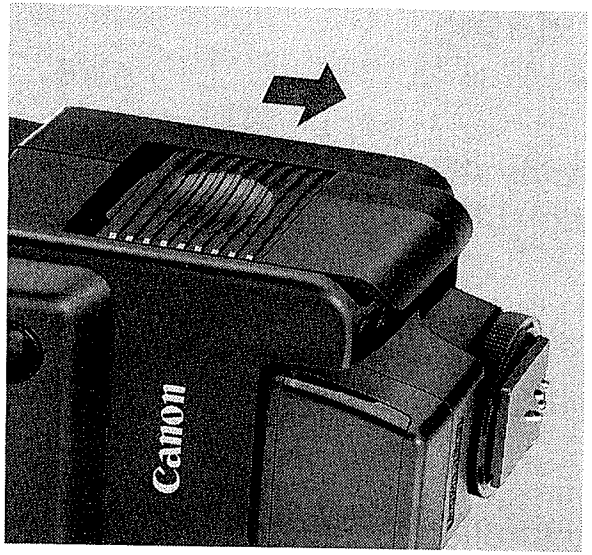
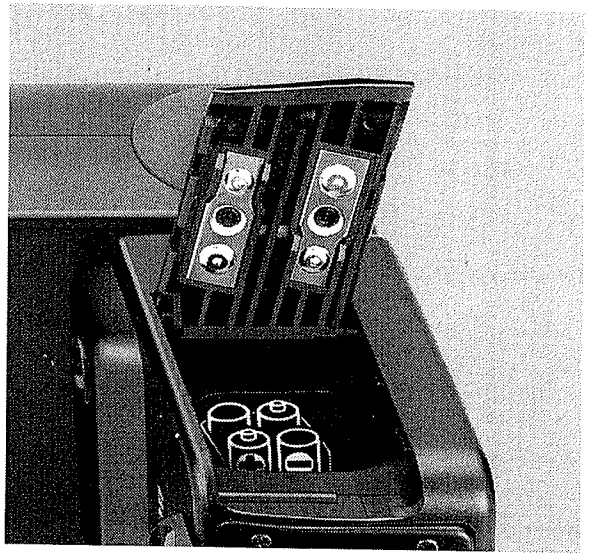
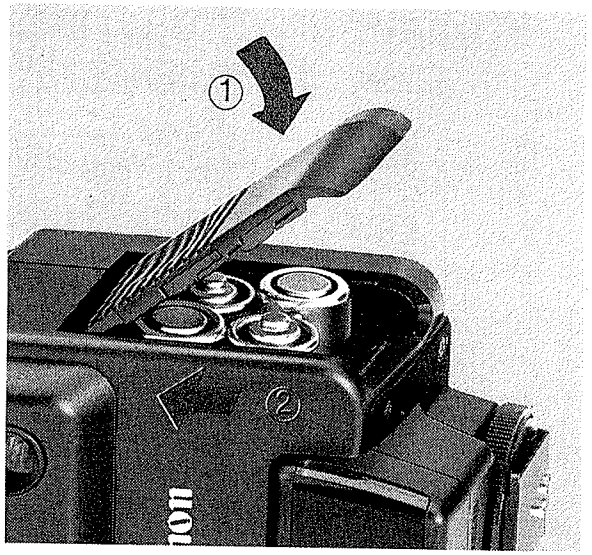
Preliminary Preparations

1. Loading the Batteries







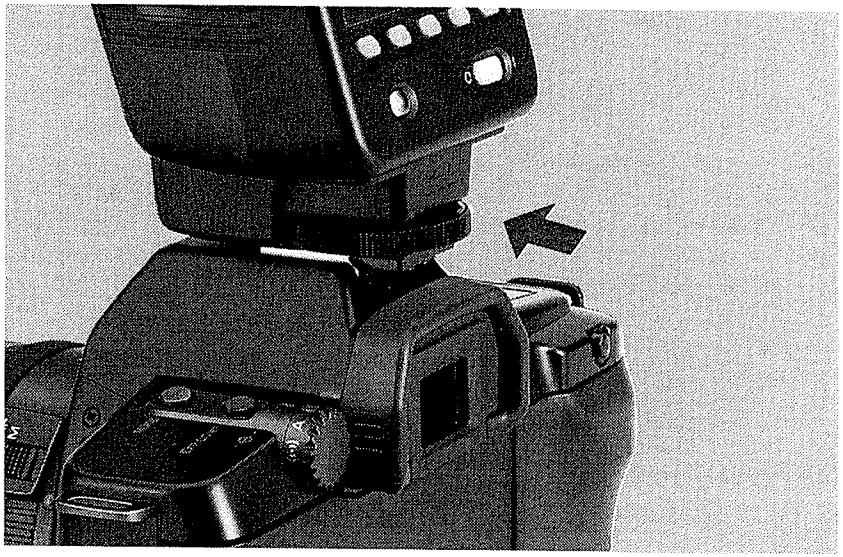
Use four, new, size-AA alkaline (LR6) or Ni-Cd batteries. Carbon-zinc batteries may also be used, but their life is shorter. Wipe the battery terminals with a clean, dry cloth to ensure proper contact.

1) Slide the battery chamber cover down in the direction of the arrow to open.
2) Load the batteries so that their terminals face in the directions indicated by the diagram inside the battery chamber.
3) Finally, push the cover completely down and slide it back to close.

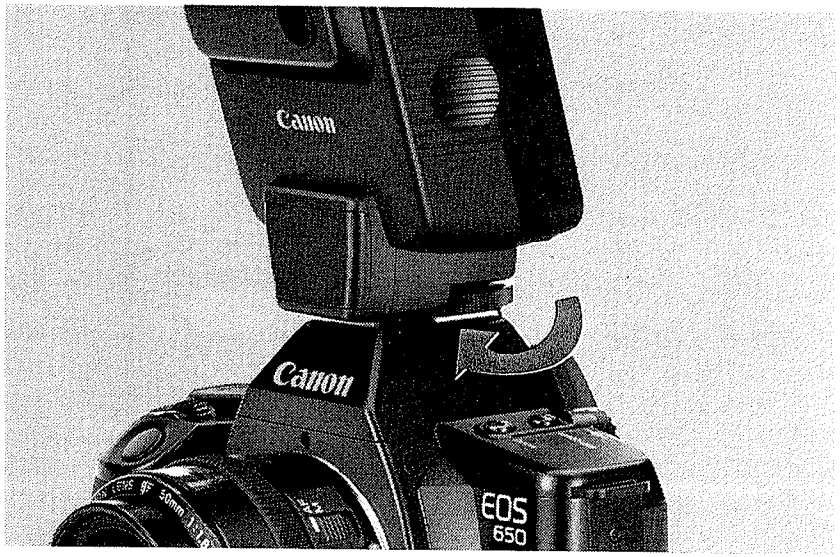
Notes

- When the batteries become exhausted, replace all four at the same time with the same brand.
- Remove the batteries if you do not expect to use the flash unit for about three weeks or longer.
- Battery performance deteriorates in cold temperatures below 0°C/32°F so please keep the batteries warm until just before use. For best results, use fully-charged Ni-Cd batteries in cold temperatures below 0°C/32°F.
- When using Ni-Cd batteries, please note that various brands have different types of terminals. Be sure to use a suitable type. Recharge Ni-Cd batteries according to the manufacturer's instructions.

2. Mounting the Flash

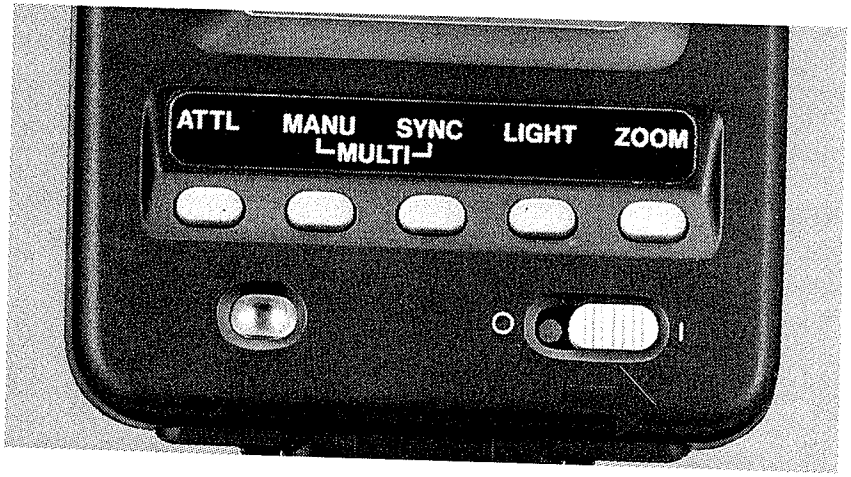


1) Loosen the lock nut and slide the flash unit into the camera's accessory shoe. To ensure correct electrical contact, make sure it is pushed in all the way.



2) Tighten the lock nut.

3. Ready Lamp and Test Firing



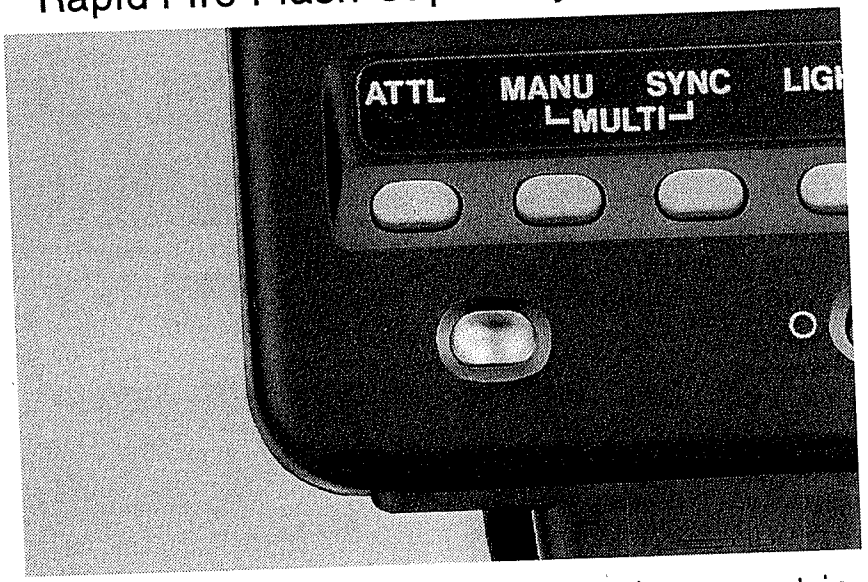
Turn the main switch ON ("I" mark) and wait for the ready lamp to light up. To test functioning, press the ready lamp after it has lit and if the flash fires it is in proper working order.

- Be sure to press the ready lamp before pressing the shutter button halfway. Otherwise, test firing is not possible.
- Flash charge is also confirmed by the "⚡" mark in the viewfinder.
- When the shutter button is pressed halfway, the flash head position automatically adjusts. (see p.10)
- For interval flash photography, attach the Technical Back E and set the mode to the interval timer or self-timer. The flash charge starts automatically one minute before shutter release.

SE (Save-Energy) Function

Turn the main switch OFF ("○" mark) when flash photography is finished to prevent unnecessary battery consumption. The Speedlite 420EZ has a built-in SE (Save-Energy) function that automatically turns off power when the flash is not used for approximately five minutes (test firing, preflash, etc.). All panel displays start blinking approximately 30 seconds before SE operation. Press the ready lamp to re-start the flash.

Rapid-Fire Flash Capability



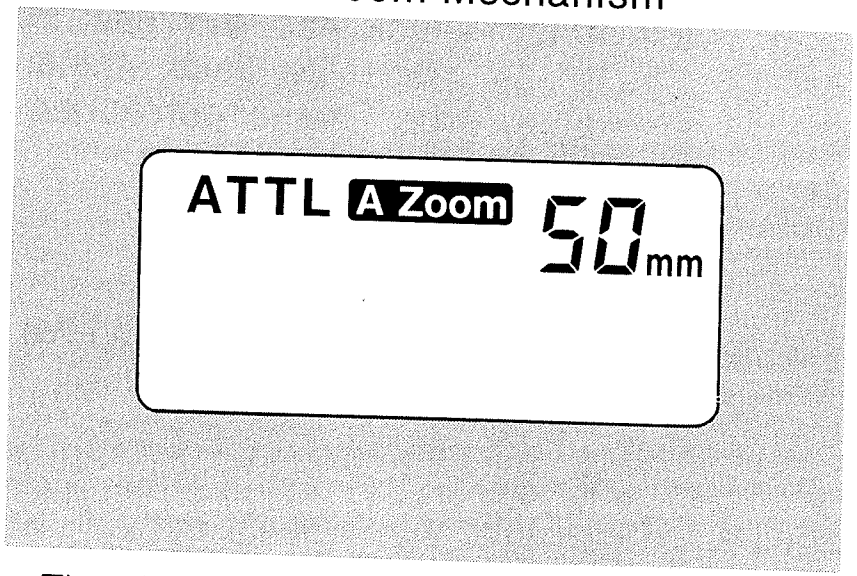
To help capture an unexpected moment in flash photography, the Speedlite 420EZ has rapid-fire flash capability, a short flash recycling time, previously impossible with any other SLR system.
When charged, the color of the ready lamp changes as follows:

(1) Yellow-green — Indicates the unit in rapid-fire flash status, but fires for correct exposure.
(2) Red — Indicates the unit is fully-charged.

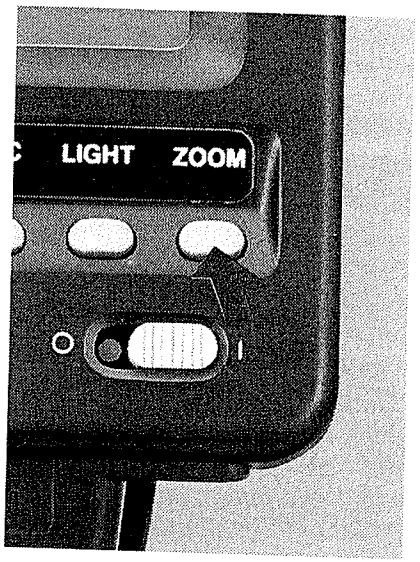
- See the guide number table for rapid-fire flash status on p.34.

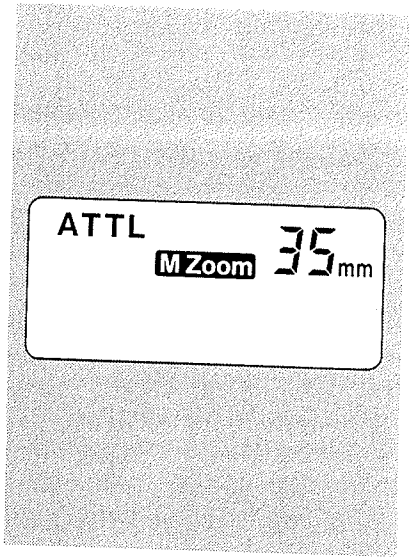
Replace with new batteries if the yellow-green lamp does not light for 10 seconds after the main switch is turned ON.

Auto Internal Zoom Mechanism



The Speedlite 420EZ has an auto zoom mechanism which automatically adjusts flash coverage angle to use flash energy more effectively.
The flash head position automatically adjusts according to the lens focal length. When using a zoom lens, it also switches automatically according to zooming. The position setting of 24, 28, 35, 50, 70, or 80mm and "A Zoom" appears in the display panel.

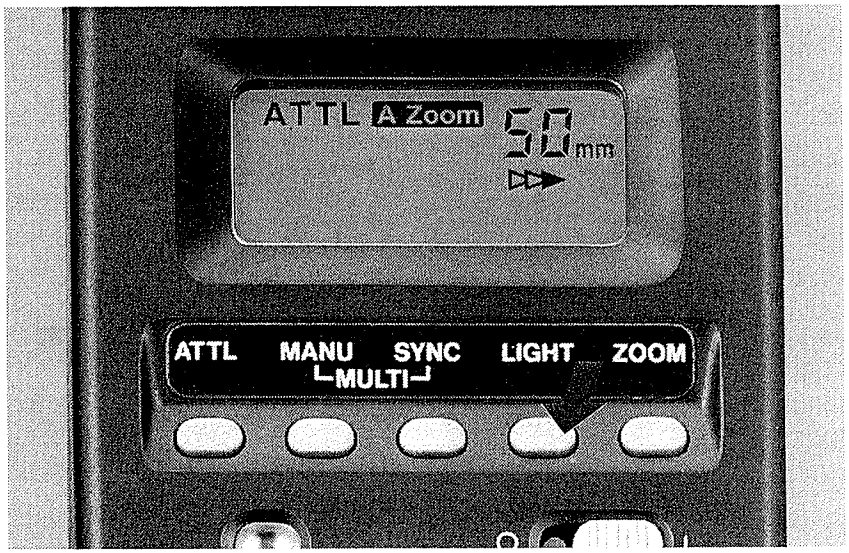




To change the flash head position manually, press the zoom button until the desired setting appears, the "M Zoom" lights. Do not choose a setting larger than the lens focal length. Always be sure to set the position equal to or smaller than the lens focal length, otherwise, exposure will not be uniform.

- The guide number varies according to the flash head position, see p.34.

Display Panel Illumination



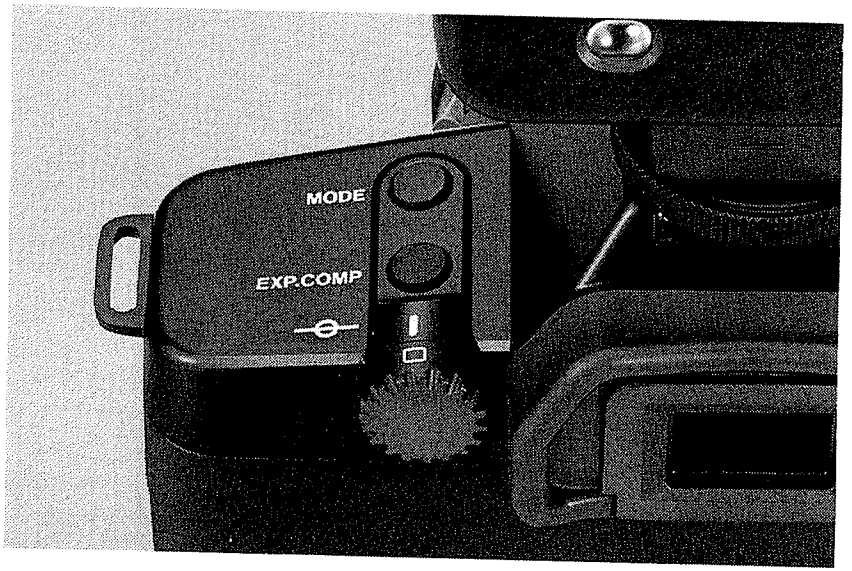
Press the light button to illuminate the display panel for approximately eight seconds.

AF Auxiliary Light

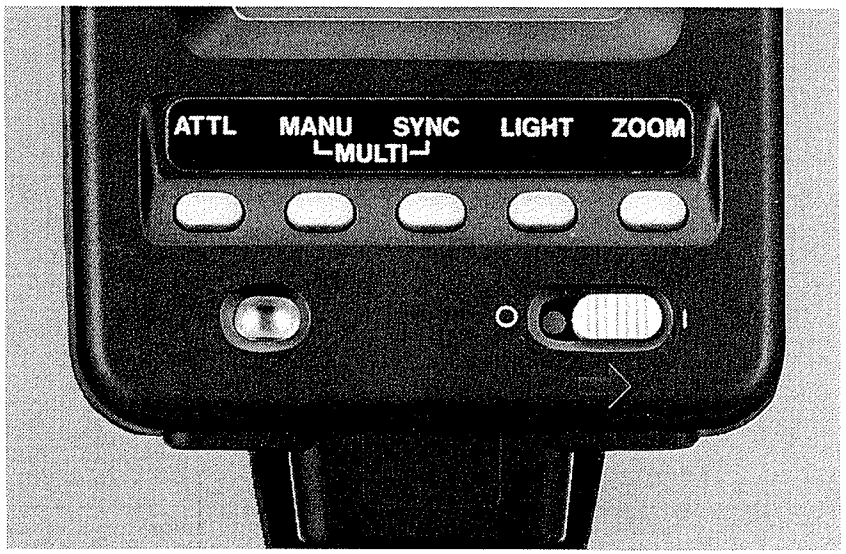
In dark settings difficult for autofocusing, the AF auxiliary light automatically emits to help the camera focus. The effective distance range is approximately 0.9-8m. (3-26.2 ft.) If the subject is too far away, the AF in-focus indicator blinks. Remove your finger from the shutter button and move closer to the subject until the AF-focus indicator lights steadily when pressed again.

Use the Speedlite 420EZ in conditions ranging from total darkness to supplemental daytime lighting by following these steps:

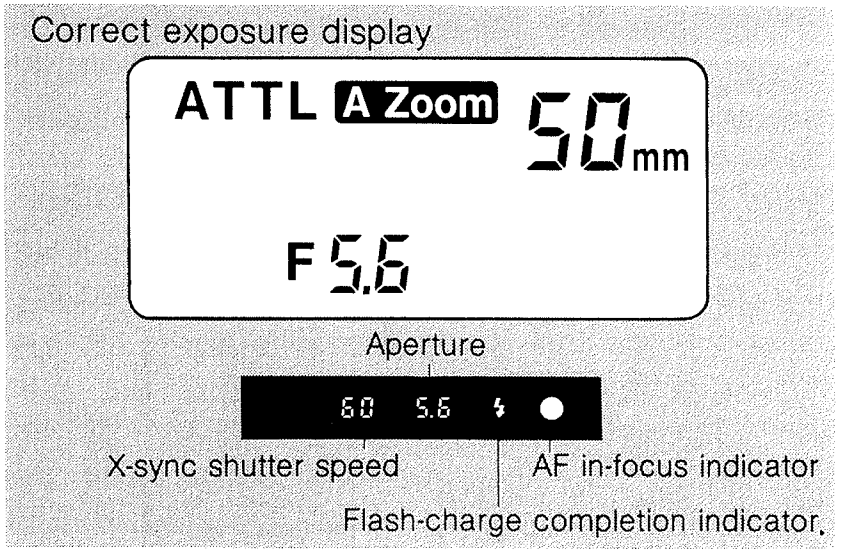
1) Slide the lens focus mode switch to "AF".



2) Set the camera's main switch to the "Full Auto" position (green "▭" mark).



3) Turn the flash's main switch ON and make sure the ready lamp lights up.
4) Cover the main subject with the AF frame and press the shutter button halfway.
   - At this point, the near-infrared light emits from the flash to choose the correct aperture value.
   - Both the X-sync shutter speed and aperture values set automatically.



5) Exposure will be correct if the X-sync shutter speed and aperture values remain continuously lit.
   - When both values blink, the subject is too far away. Remove your finger from the shutter button and move closer to the subject until both values remain continuously lit when pressed again.
   - When shooting in daylight (fill-in flash), the minimum aperture of the lens in use may blink. The background will be overexposed but the main subject correct. (see p.15)
   - The camera-shake warning does not sound when the flash is turned ON.

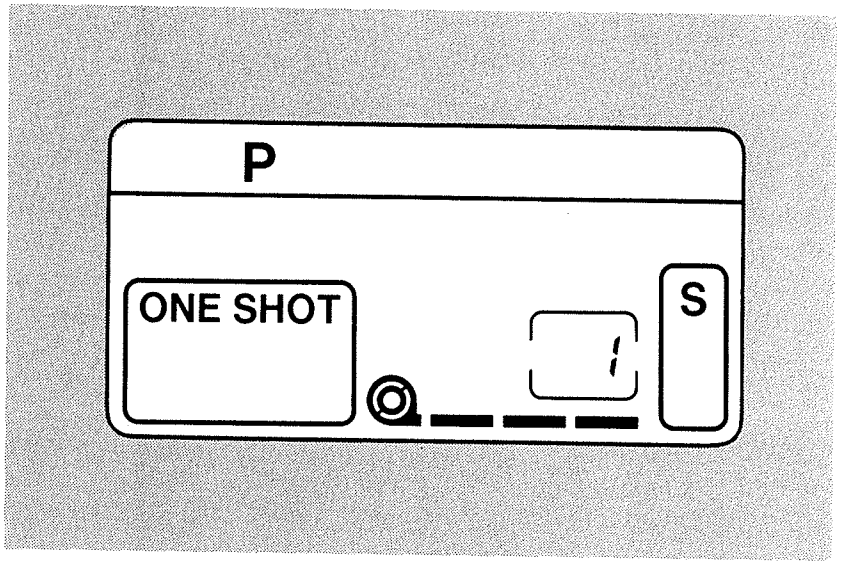
A-TTL Automatic Mode:

The Speedlite 420EZ features the A (Advanced)-TTL mode which can be used under conditions ranging from total darkness to fill-in flash.
Flash output is controlled by directly measuring the light coming through the lens and reflected from the film surface, using the sensor inside the camera body. Moreover, this A-TTL mode balances the exposure between the main subject illuminated by the flash and the background in ambient light to prevent unnatural effects.

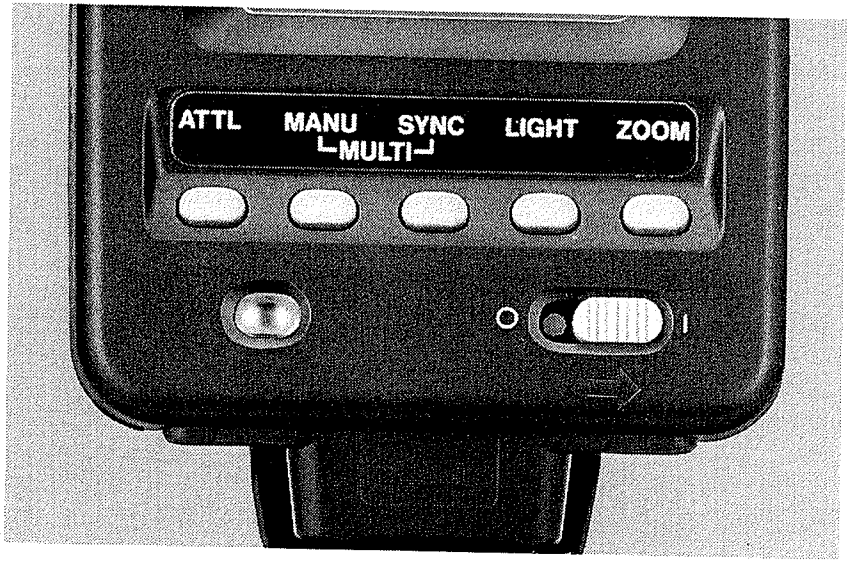
- The setting for each shooting mode is slightly different so please read the following carefully.

- The camera-shake warning does not sound when the flash is turned ON.
- When the camera is set to the depth-of-field AE mode with the flash ON, the mode is automatically switched to the program AE mode.

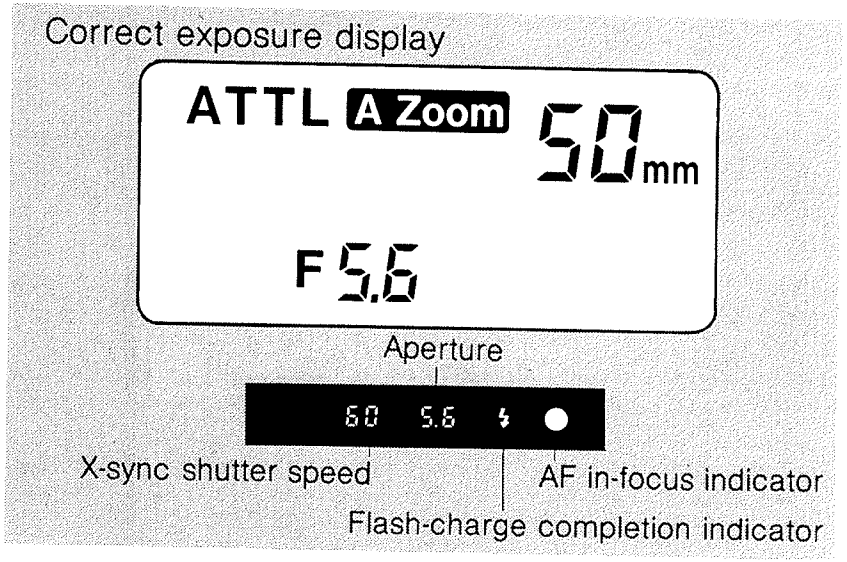
1. Program AE Mode [A-TTL]



Set the camera to "P" and the X-sync shutter speed and aperture are set automatically so you can concentrate on picture composition. (The X-sync shutter speed is automatically set between 1/60 and 1/250 sec with the EOS 620, and 1/60 and 1/125 sec with the EOS 650.)

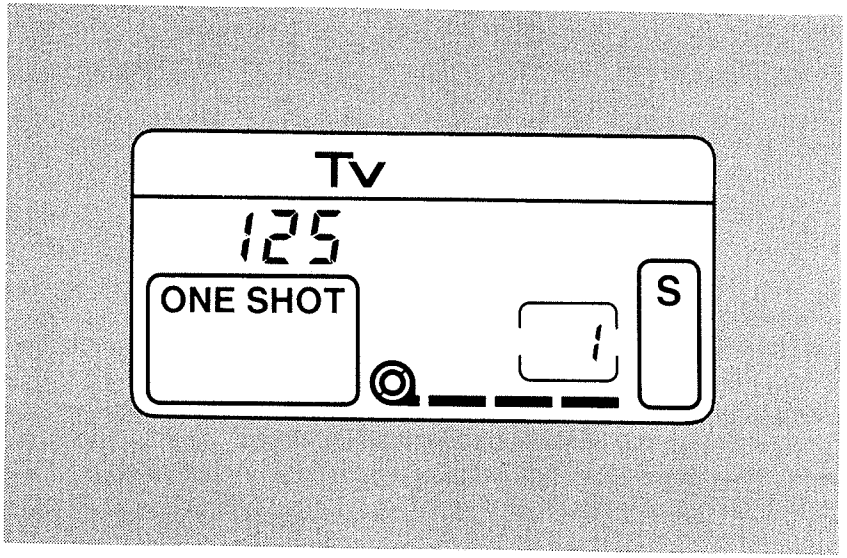


1) Turn the main switch ON and make sure the ready lamp lights up.
2) Cover the main subject with the AF frame and press the shutter button halfway.
3) Exposure will be correct if continuously lit values display.

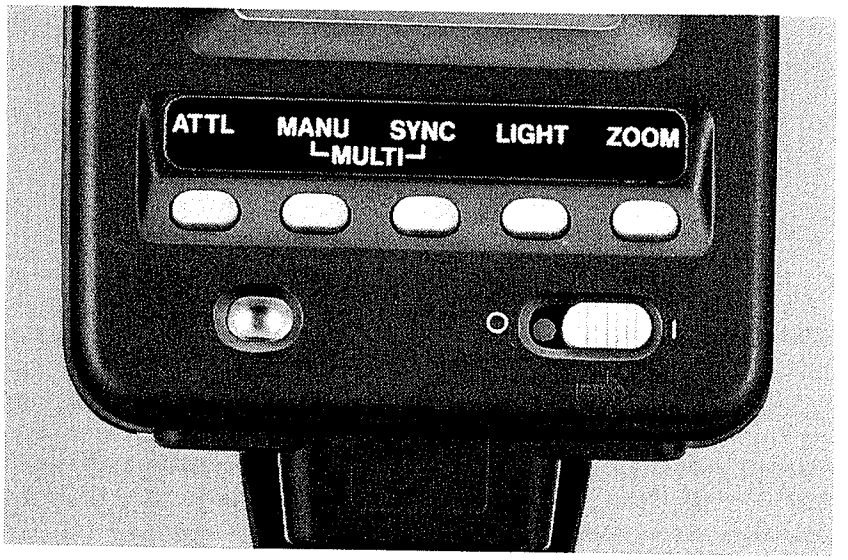


1. When both values blink, the camera is warning that the subject is too far away. Remove your finger from the shutter button and move closer to the subject until both values light steadily when pressed again.
2. In fill-in flash, the aperture value may start blinking; the camera is warning that A-TTL is impossible and the background will be overexposed. The main subject, however, will be correctly exposed because normal TTL (see p.20) functions instead of A-TTL.

2. Shutter-priority AE Mode [A-TTL]

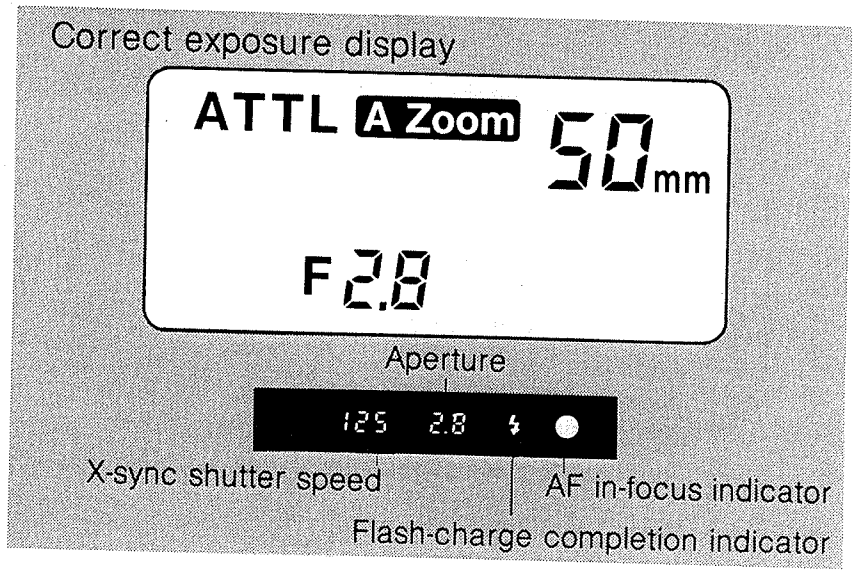


Set the camera to "Tv" to set the desired X-sync speed. The X-sync shutter speed can be set between 30 and 1/250 sec with the EOS 620, and between 30 and 1/125 sec with the EOS 650. The aperture is set automatically.



1) Turn the main switch ON and make sure the ready lamp lights up.
   - The shutter speed will be set to the fastest possible X-sync speed (1/250 sec with the EOS 620 and 1/125 sec with the EOS 650) automatically if set at a higher value.

2) Cover the main subject with the AF frame and press the shutter button halfway.



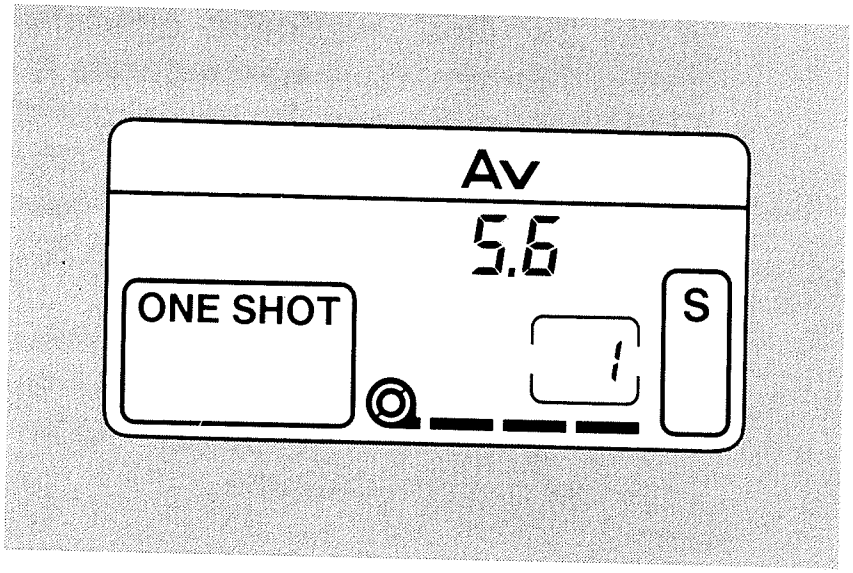
3) Exposure will be correct if continuously lit values display.

1. When both values blink the camera is warning that the subject is too far away. Remove your finger from the shutter button and move closer to the subject until both values light steadily when pressed again.

2. When the lens' maximum aperture blinks, the camera is warning that A-TTL is impossible and the background will be underexposed. The main subject, however, will be exposed correctly because normal TTL (see p.20) functions instead of A-TTL.
   - The maximum aperture value may stop blinking when a slower shutter speed is set: A-TTL is possible but be careful of camera-shake.

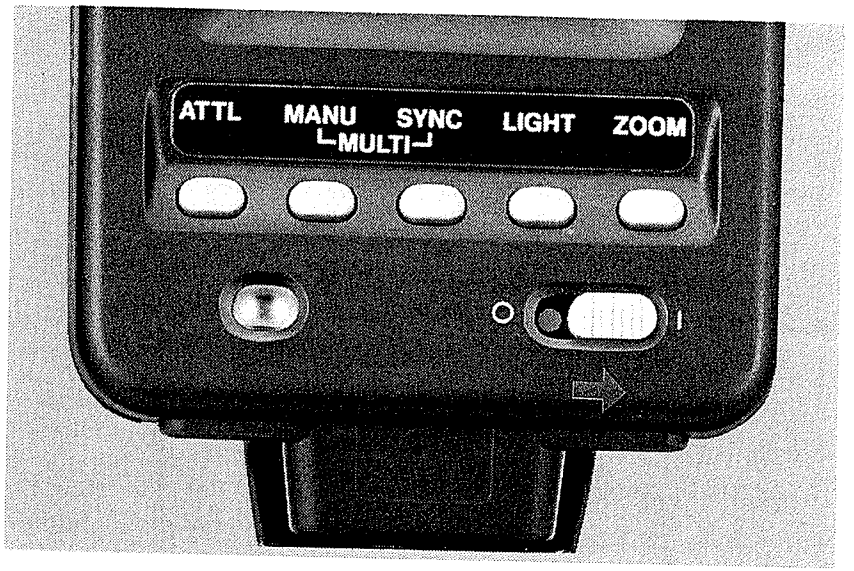
3. When the lens' minimum aperture blinks, the camera is warning that A-TTL is impossible and the background will be overexposed. The main subject, however, will be exposed correctly because normal TTL (see p.20) functions instead of A-TTL.
   - The minimum aperture may stop blinking when a faster shutter speed is set: A-TTL is possible.

3. Aperture-priority AE Mode [A-TTL]



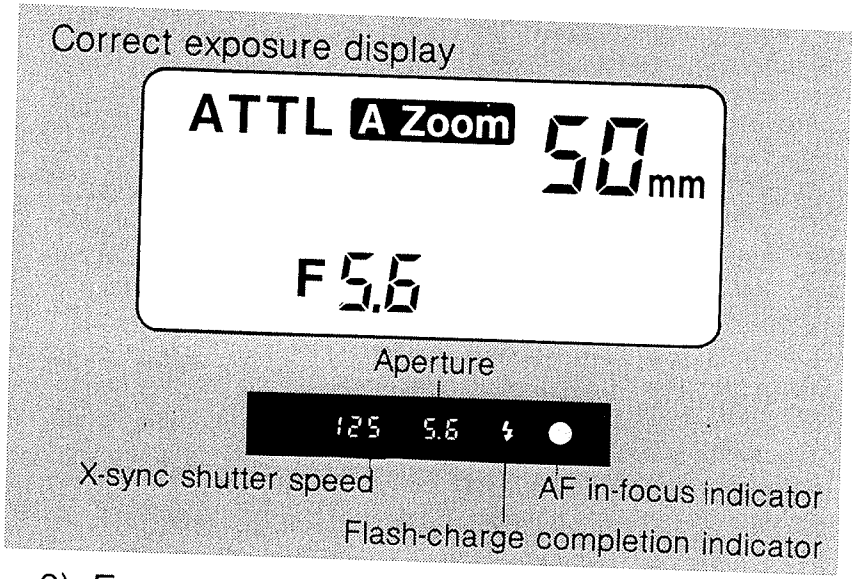
Set the camera to "Av" to take the subject depth of field into account. This setting is best for fill-in flash portraits and slow-sync flash photography. The aperture is set manually while the shutter speed is set automatically (between 30 and 1/250 sec with the EOS 620, and between 30 and 1/125 sec with the EOS 650).

The automatically-set shutter speed will be comparatively slow in the dark. The camera-shake warning does not sound so use a tripod.



1) Turn the main switch ON and make sure the ready lamp lights up.

2) Cover the main subject with the AF frame and press the shutter button halfway.



3) Exposure will be correct if continuously lit values display.

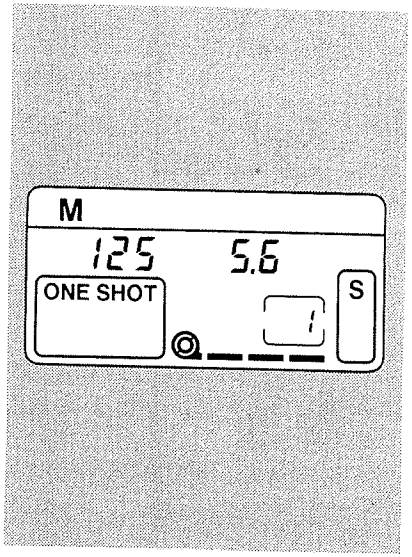
1. When both values blink, the camera is warning that the subject is too far away. Remove your finger from the shutter button and move closer to the subject until both values light steadily when pressed again.

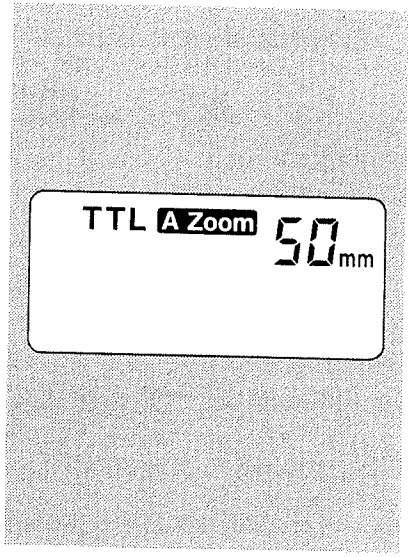
2. When the shutter speed of 30″ blinks, the camera is warning that A-TTL is impossible and the background will be underexposed. The main subject, however, will be exposed correctly because normal TTL (see p.20) functions instead of A-TTL.
   - A blinking shutter speed of 30″ may stop when a larger aperture is set. A-TTL is possible but be careful of camera-shake.

3. When the fastest possible X-sync shutter speed (1/250 sec with the EOS 620 and 1/125 sec with the EOS 650) blinks, the camera is warning that A-TTL is impossible and the background will be overexposed. The main subject, however, will be exposed correctly because normal TTL (see p.20) functions instead of A-TTL.
   - A blinking shutter speed may stop when a smaller aperture is set and A-TTL is possible.

4. Manual Mode [TTL]

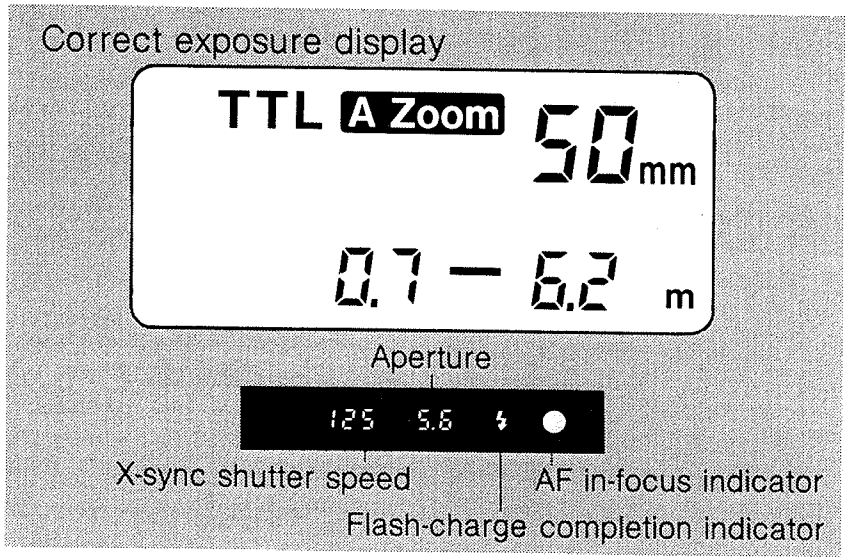
TTL Automatic Mode:
Use this mode to control the exposure by setting both the shutter speed and the aperture manually. In the TTL mode, correct exposure can be obtained only for the main subject while A-TTL balances exposure between the main subject and the background for correct exposure on both.





1) Turn the main switch ON and make sure the ready lamp lights up.

2) Set the camera's shooting mode to "M." "A-TTL" display automatically changes to "TTL" in the display panel.



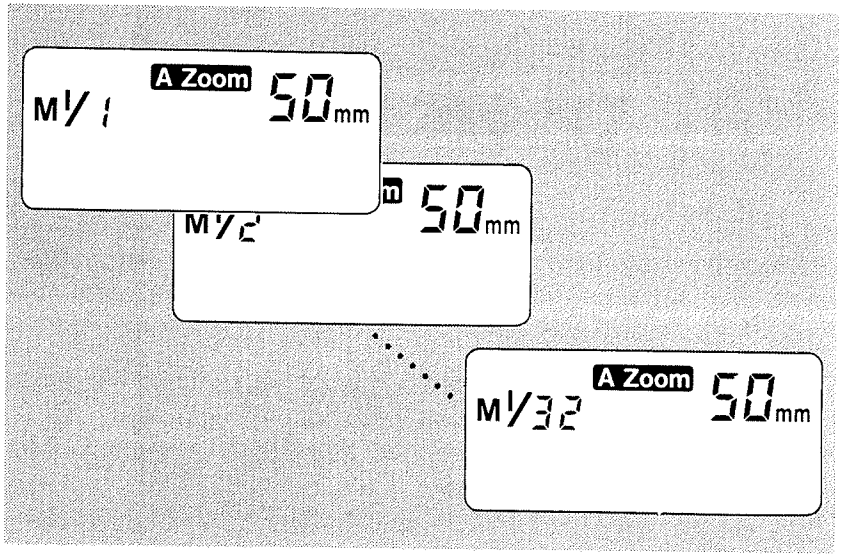
3) Set the desired X-sync shutter speed and aperture values on the camera. (Refer to the camera's instruction booklet.)
   - The shutter speed will be set to the fastest possible X-sync speed (1/250 sec with the EOS 620 and 1/125 sec with the EOS 650) automatically if set at a higher value.

4) Press the shutter button halfway to check the automatic flash shooting distance range in the display panel.

- The automatic shooting distance range changes according to the flash head position, film speed and the aperture value set on the camera.
- When the automatic shooting distance range is beyond 30m/99ft, the "▶" mark appears to the right.
- Correct exposure is impossible when the automatic shooting distance range display blinks.
- Rapid-fire flash is impossible in the TTL mode.

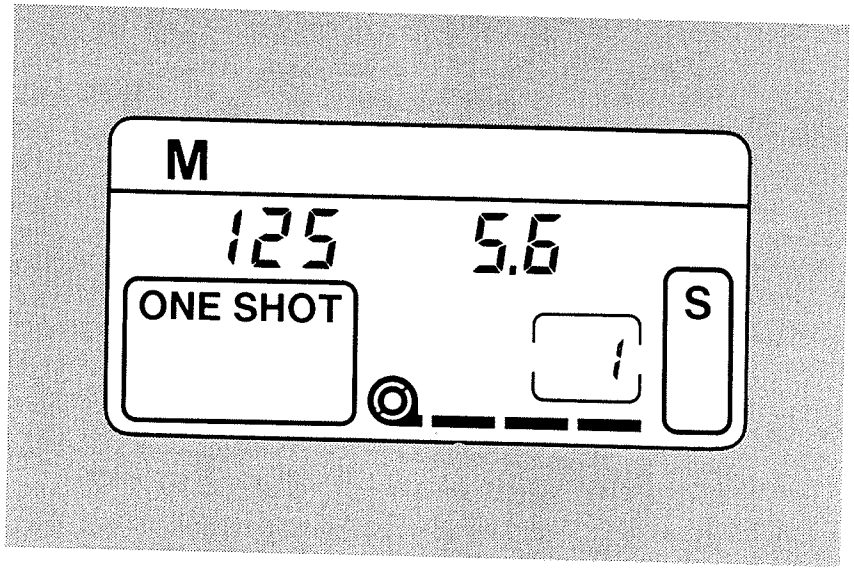
5. Manual Flash Exposure

Sometimes automatic flash may not be suitable for your subject. For instance, if the subject's surroundings are bright white with strong reflections or if the main subject is small with a dark or distant background, automatic flash exposure may be affected by the contrasting background.



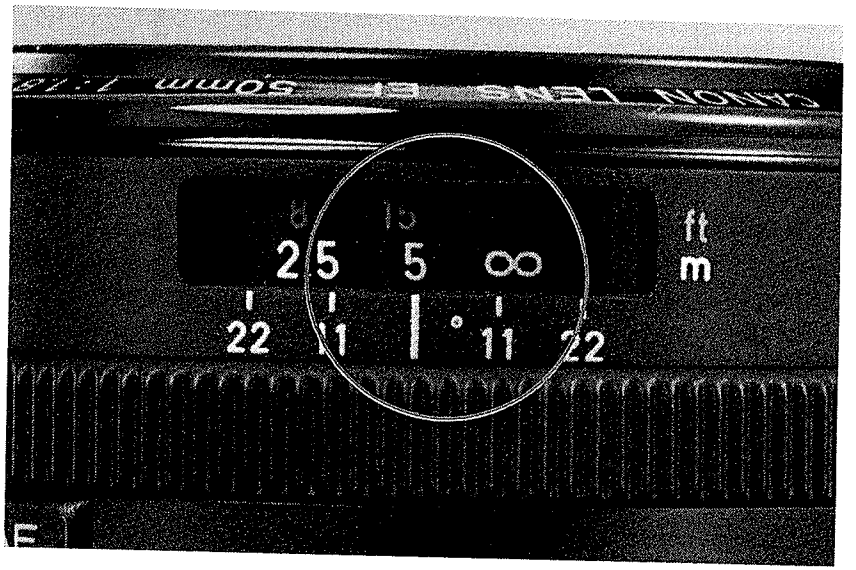
1) Turn the main switch ON and make sure the ready lamp lights up.

2) Press the manual flash set button to set the flash intensity. As this button is pressed, the flash intensity display appears in sequence of M1/1, M1/2, M1/4, M1/8, M1/16, and M1/32.
   - Please see the guide number table on p.34.

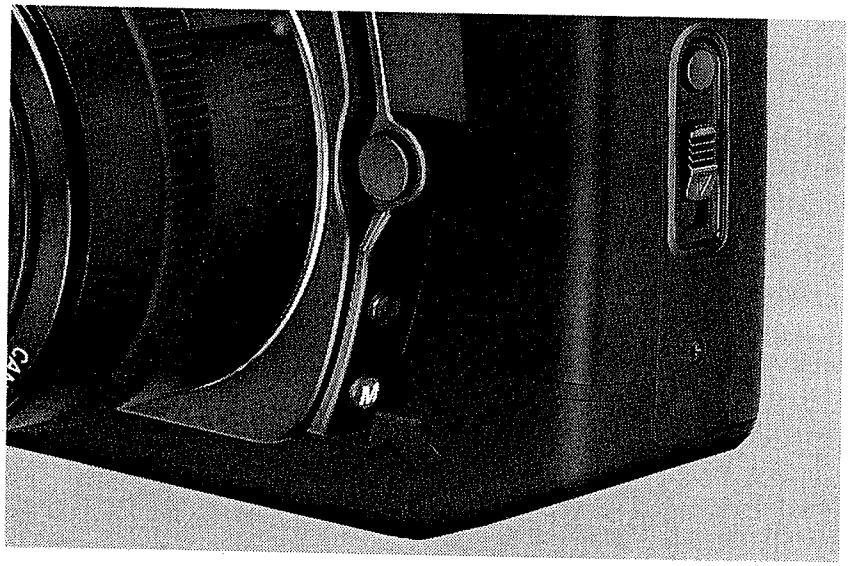


3) Set the camera to "M".

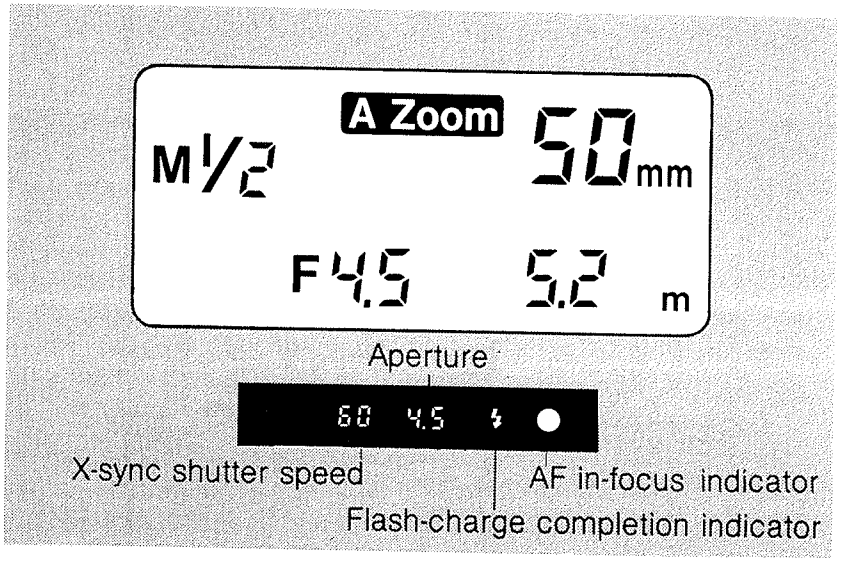
4) Set the desired X-sync shutter speed and aperture values on the camera. (Refer to the camera's instruction booklet.) Correct shooting distance appears in the display panel.
   - The shutter speed will be set to the fastest possible X-sync speed (1/250 sec with the EOS 620 and 1/125 sec with the EOS 650) automatically if set at a higher value.



5) Set the camera's AF mode to "ONE SHOT" and focus the subject to read the distance from the lens' distance scale.



6) While pressing the camera's manual aperture set button, turn the electronic input dial. As the aperture changes, the shooting distance display also adjusts.

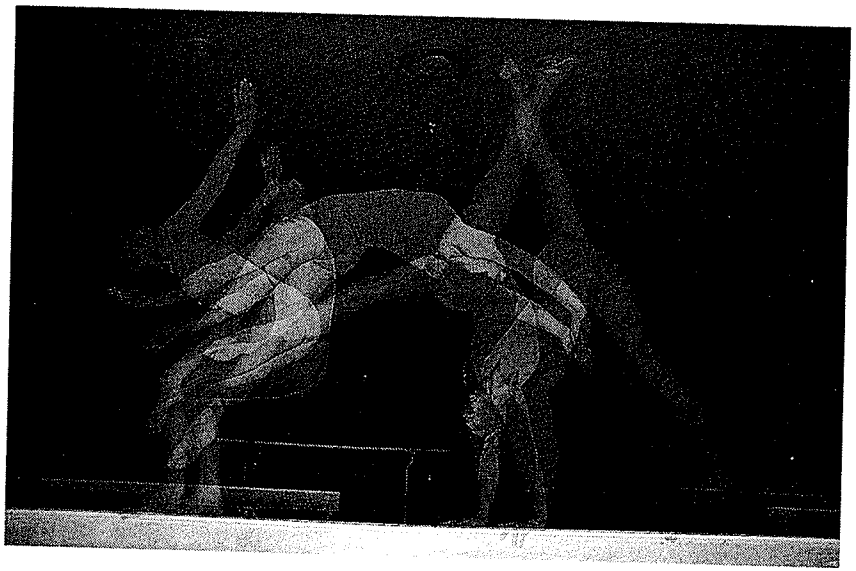


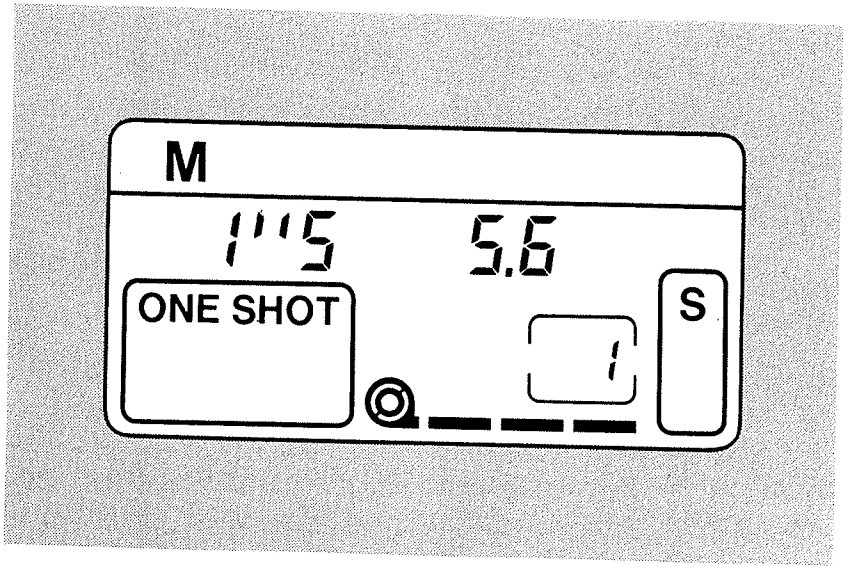
7) Turn the electronic input dial until the shooting distance display nearly equals the lens' distance scale.

- The shooting distance display changes according to the flash head position, film speed in use and the aperture value set on the camera.
- When the shooting distance is beyond 30m/99ft , the "▶" mark appears to the right.
- Correct exposure is impossible when the shooting distance display blinks or when it does not change.
- Rapid-fire flash is impossible when using M1/1 and M1/2.
- Press the A-TTL button to reset to the normal flash mode.

6. Stroboscopic Flash

With the Speedlite 420EZ, it is possible to take a tricky photo emphasizing the flowing movement of the subject as if it were "disassembled" as shown in the photo.

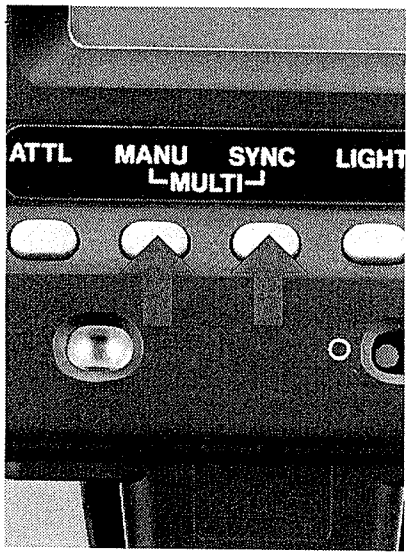




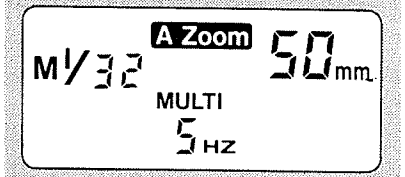
1) Make sure the ready lamp color turns red.

2) Set the camera to "M".

3) Set the desired aperture and X-sync shutter speed to one second or slower.
   • Bulb may also be used.



(example)



4) Press the manual flash set button and the sync position button simultaneously. "M$^1/_1$" and "MULTI 1Hz" appear in the display panel.

5) Press the manual flash set button to set the flash intensity.

6) Press the sync position button to set the number of flashes per second.
   - Set the flash intensity and the number of flashes per second by referring to the following table as a guideline.

Maximum Number of Flashes

	5Hz	4Hz	3Hz	2Hz	1Hz
M $^1/_1$	1	1	1	1	1
M $^1/_2$	2	2	2	2	2
M $^1/_4$	4	4	4	5	5
M $^1/_8$	8	8	9	9	12
M $^1/_{16}$	17	18	20	25	173
M $^1/_{32}$	29	30	39	88	244

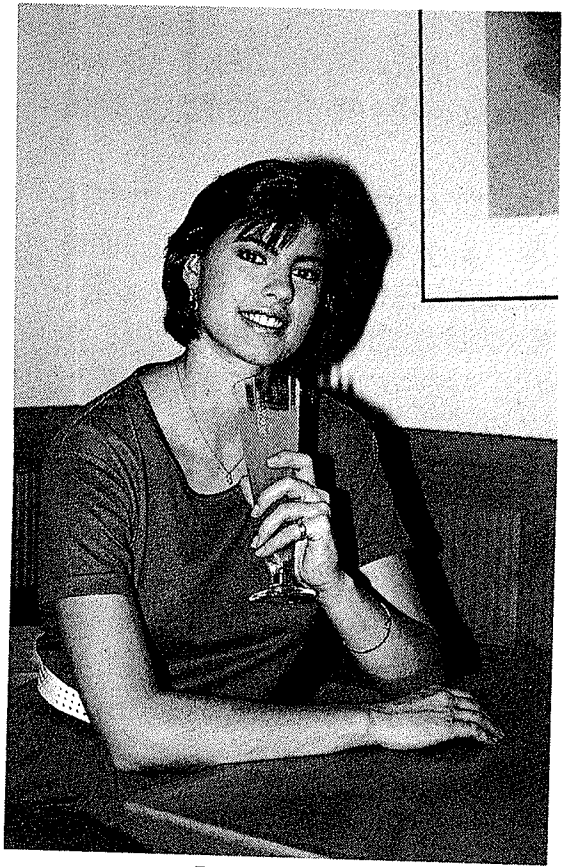
(Based on Canon's Standard Test Method)

- 5 Hz, for example, indicates flash fire approximately five times per second.
- This mode is effective when the main subject is highly reflective and the background is as dark and distant as possible.
- A tripod, Remote Switch 60T3 and new batteries are recommended for this mode.
- This mode cannot be used for second-curtain sync photography. (see p.30)
- Press the A-TTL button to reset to the normal flash mode.

7. Bounce Flash Photography

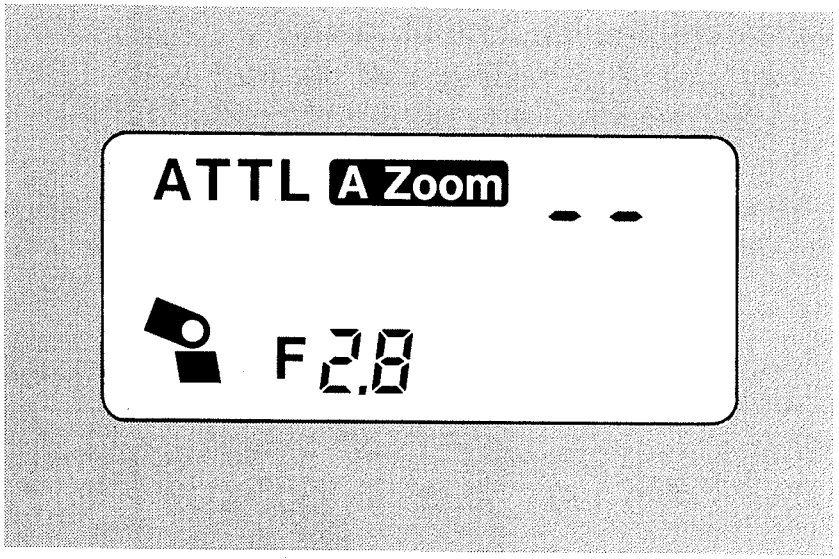
Pointing the flash head toward a wall or ceiling and illuminating the subject with light reflected off of that surface is called bounce flash. Because the light is reflected, a loss of light volume is unavoidable, on the other hand, there are no dark shadows and a soft illumination. The Speedlite 420EZ features A-TTL or TTL automatic output control so there is no need for exposure calculations.

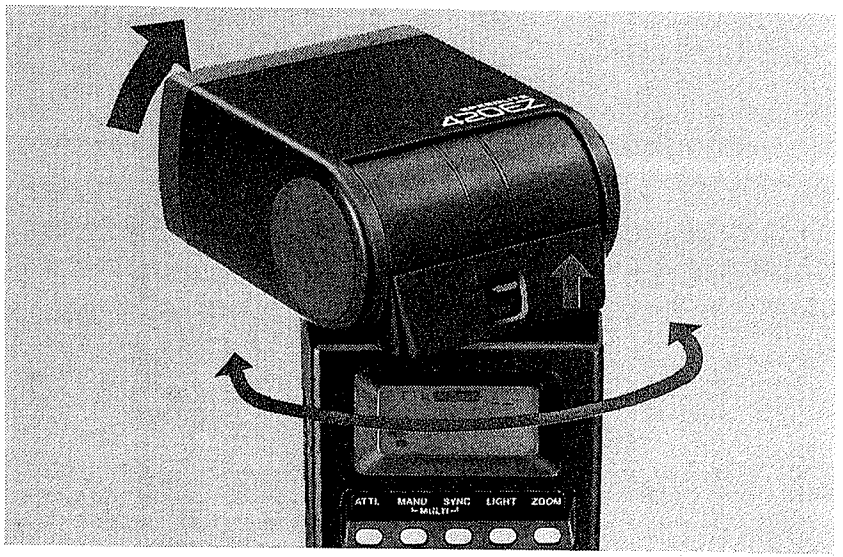
Bounce Flash Photography



Direct Flash Photography

- Bounce flash can also be used with various shooting modes. (see pp.14-21 for setting and exposure information.) Confirm exposure before shooting because the actual shooting distance is a total of the flash-to-reflecting surface distance and the subject-to-reflecting surface distance.
- In bounce flash only, the flash head emits the visible preflash instead of the near-infrared light.
- When tilted for bounce flash, the flash head automatically sets to 50mm and the display "--". The bounce mark ( ) also appears in the display panel. It is also possible to set the flash head position manually.
- The zoom head swivels 90° upward, 180° to the left and 90° to the right in any combination. Click stop positions are provided for extra convenience. To swing the flash horizontally, first slide the bounce latch upward and then rotate the flash left or right.

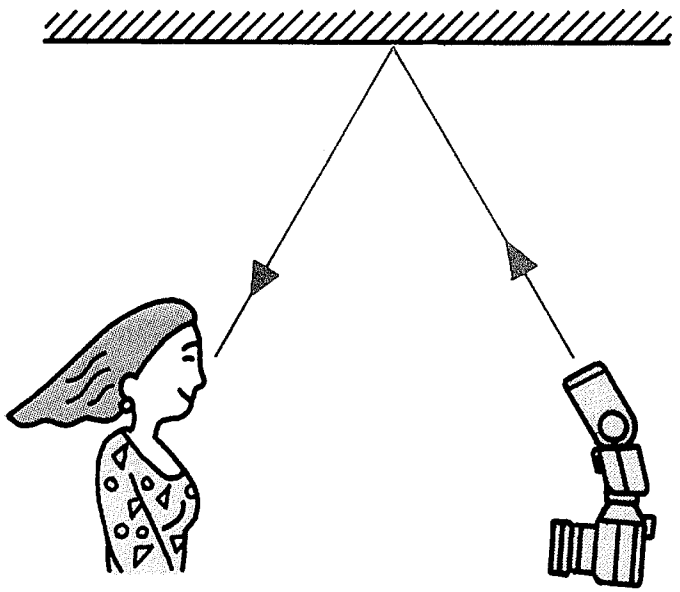




Helpful Hints:

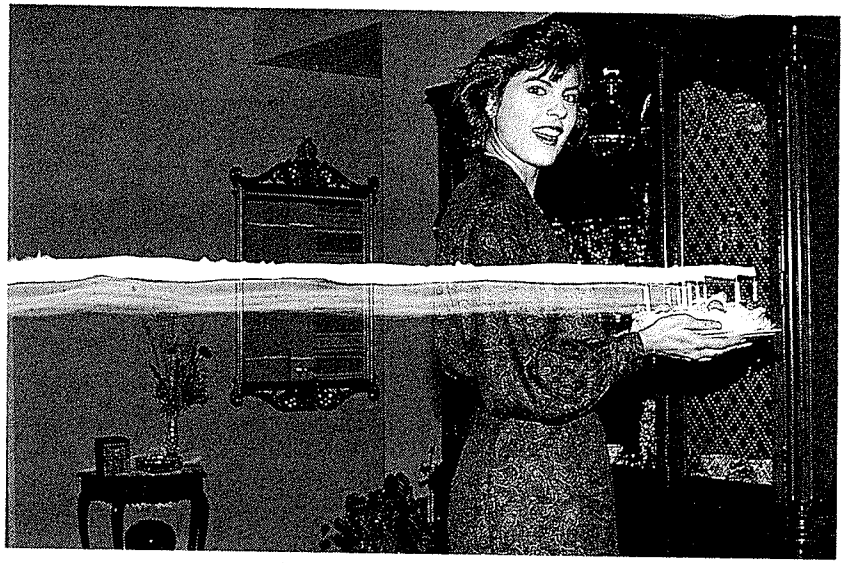
With bounce flash photography, it is necessary to adjust the flash head so that the subject is not directly illuminated by the flash. If you only tilt the flash up a few degrees exposure will not be uniform. The easiest way to use bounce flash is to tilt the flash head up 90° and bounce off a ceiling.

The bounce surface should be white or nearly white, fairly large and highly reflective. A colored, reflecting surface may cause the subject to appear tinted that color. The subject color may also be disappointing if the surface reflects poorly. A very high ceiling does not make a good surface for bounce flash; a solution would be to bounce the flash off a white card reflector. Generally, the closer the flash is to the bounce surface, the brighter and higher in contrast the picture will be.



8. Second-Curtain Sync Flash Photography

With focal plane shutters, flash synchronization is made when the first curtain is fully open. With the Speedlite 420EZ, it is also possible to make the flash synchronization just before the second curtain starts running. This is called "second-curtain sync" and is best when a slower shutter speed is used. (The shutter-priority AE mode is recommended.)
When second curtain sync is used with a moving subject and a slow shutter speed, the light from the flash clearly illuminates the subject for a sharp image but creates a trailing image from ambient light for a flowing effect.



Second-Curtain Sync Flash Photography

First-Curtain Sync Flash Photography

To set:

Press and release the sync position button.

- When the "⇉" mark is displayed, the second curtain sync is made automatically.
- When no mark is displayed, the first curtain sync is made.
- The second-curtain sync cannot be used with the stroboscopic flash mode.

Handling Precautions

1. Do not take the flash unit apart. If repair is necessary take it to the nearest Canon Service Facility.

2. Do not get the flash wet. If exposed to rain or snow, immediately wipe it off with a clean, dry cloth.

3. Do not fire the flash too close to the subject's eyes or while holding it against clothing.

4. Do not use the 420EZ with any other manufacturers' cameras because the 420EZ is especially designed for use with Canon EOS cameras.

5. Use a slave unit for multiple flash photography, but make sure it can be used with the 420 EZ before purchase.

Speedlite Care

1. Remove the batteries if you do not expect to use the flash about three weeks or longer.

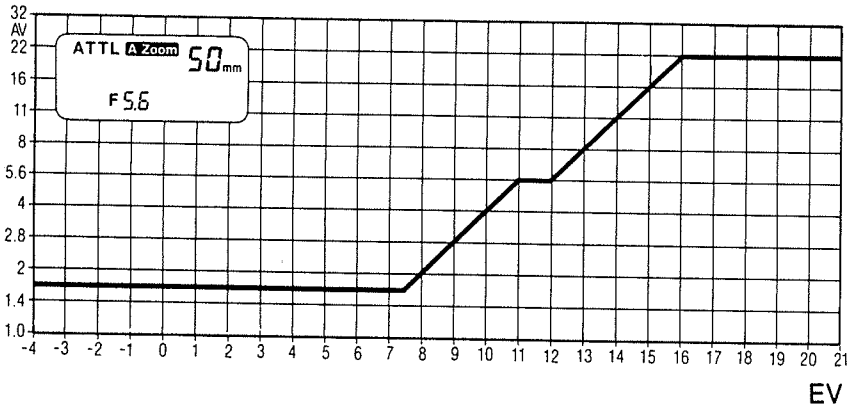
2. Do not store the flash in hot or humid places. Keep it out of direct sunlight.

3. After prolonged storage, test-fire the flash from time to time to maintain proper capacitor functioning.

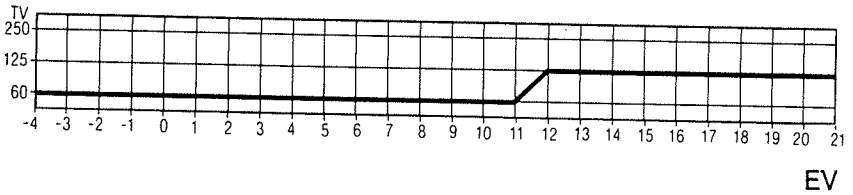
Program Characteristics

EOS 650 (when using EF 50mm f/1.8)

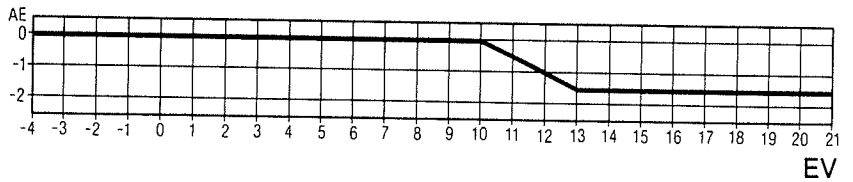
A-TTL Program Characteristics



X-sync Shutter Speed Setting Characteristics

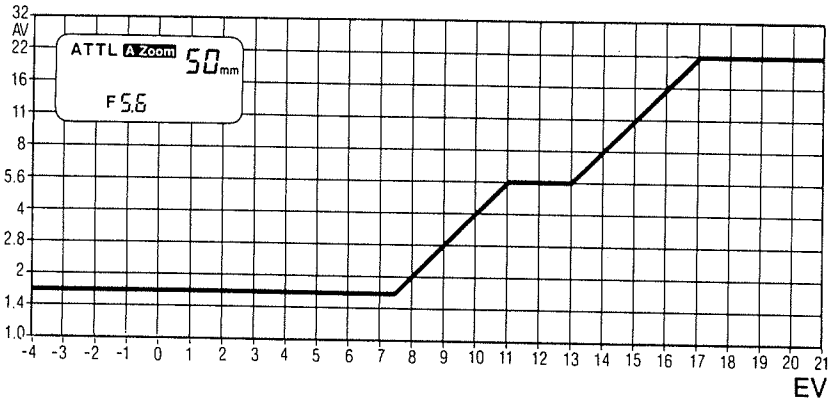


Flash Exposure Level Control Characteristics

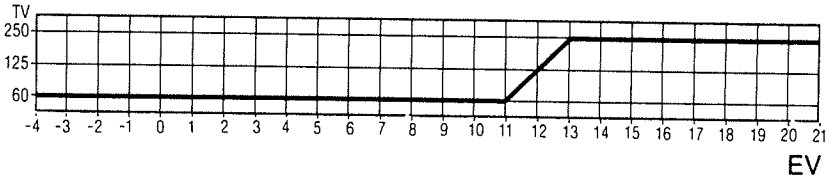


EOS 620 (when using EF 50mm f/1.8)

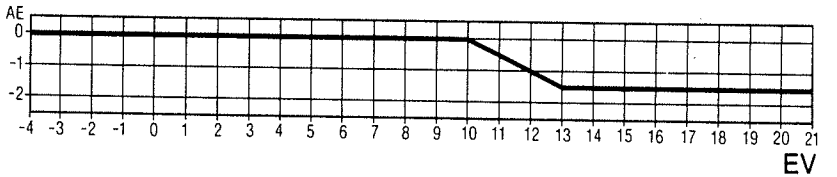
A-TTL Program Characteristics



X-sync Shutter Speed Setting Characteristics



Flash Exposure Level Control Characteristics



Specifications

Type: Energy-saving, automatic, electronic flash unit uses A-TTL metering system to measure light reflected from the film surface. Clip-on type with directly coupled contacts. For exclusive use with EOS cameras.

Guide Number Table (at ISO 100):

Zoom position (mm)		24	28	35	50	70	80
Normal flash		25 (83)	27 (90)	30 (100)	35 (116)	40 (133)	42 (140)
Rapid-fire flash		1/2 to 1/16 of that for normal flash					
Manual flash	1/1	25 (83)	27 (90)	30 (100)	35 (116)	40 (133)	42 (140)
	1/2	17.7 (59)	19.1 (63)	21.2 (70)	24.7 (82)	28.3 (94)	29.7 (99)
	1/4	12.5 (41)	13.5 (45)	15 (50)	17.5 (58)	20 (66)	21 (70)
	1/8	8.8 (29)	9.5 (31)	10.6 (35)	12.4 (41)	14.1 (47)	14.8 (49)
	1/16	6.3 (21)	6.8 (22)	7.5 (25)	8.8 (29)	10 (33)	10.5 (35)
	1/32	4.4 (14)	4.8 (16)	5.3 (17)	6.2 (20)	7.1 (23)	7.4 (24)

(The above figures in parentheses indicate the guide numbers in feet at ISO 100.)

Flash Coverage Angle: Covers more than the fields of view of 24mm, 28mm, 35mm, 50mm, 70mm and 80mm using auto internal zoom mechanism. Manual switchover possible.

Recycling Time:

	Alkaline	Ni-Cd
Normal flash	approx. 0.2 to 13 secs	approx. 0.2 to 6.5 secs
Rapid-fire flash	approx. 0.2 to 1.5 sec	approx. 0.2 to 1.5 sec

Based on the interval between flash firing and pilot lamp relighting with new alkaline or fully-charged Ni-Cd batteries. (Figures on the left in each column show recycling time for A-TTL mode, and on the right for Manual 1/1 mode.

Number of Flashes:

	Alkaline	Ni-Cd
Normal flash	approx. 100 to 2000	approx. 45 to 300

Based on flash firing at 30 sec intervals with new alkaline or fully-charged Ni-Cd batteries.
(The figures on the left in each column show flashes for Manual 1/1 mode, and on the right for A-TTL mode.

Flash Duration: 1.5 msec or less

X-sync Shutter Speed:

	EOS 620	EOS 650	Setting
P	1/60-1/250sec	1/60-1/125sec	Automatic
TV	30-1/250sec	30-1/125sec	Manual
Av	30-1/250sec	30-1/125sec	Automatic
M	30-1/250sec	30-1/125sec	Manual

Flash Control System: TTL series control system with preflash function.

Flash Exposure Level Control: A maximum of 1.5 BV steps in the A-TTL mode when subject brightness is more than BV5 according to the camera's metering system.

Film Speed Setting: Automatically set by the camera.

Automatic Shooting Distance Range:

A-TTL normal flash	approx. 0.7 to 21m (2.3 to 68.8 ft.)
A-TTL rapid-fire flash (min.)	approx. 0.7 to 5m (2.3 to 16.4 ft.)
A-TTL rapid-fire flash (max.)	approx. 0.7 to 16m (2.3 to 52.4 ft.)

Based on EF 50mm f/1.8 lens at ISO 100. (The automatic shooting distance range extends according to film speed.)

Out-of-Coupling Range Warning: If subject is too far away, the shutter speed and the aperture value blink in the viewfinder at the first stroke of the shutter button.
If subject is too close, the distance display blinks.

Bounce Angle:
Upward; 0-90° (click stop positions at 0, 60, 75, 90)
Left; 0-180° (click stop positions at 0, 60, 75, 90, 120, 150, 180)
Right; 0-90° (click stop positions at 0, 60, 75, 90)

AF Auxiliary Light: Ultra-bright red LED (Peak sensitivity: 700nm). Projected at subject for AF flash photography. The effective distance is approx. 0.9-8m (3-26.2ft.)

Save-Energy Function: Power automatically turns off after five minutes of non-use when the main switch is left on.

Ready Lamp: As soon as it glows, the camera automatically switches to flash mode. Yellow-green in the rapid-fire flash status, when sufficiently charged, the color turns to red. Test firing is possible by pressing the ready lamp after flash charge completion.

Power Source: Four size-AA(LR6) alkaline or Ni-Cd batteries. Carbon-zinc batteries may also be used.

Dimensions: 75(W) × 122(H) × 106(D) mm (2-15/16″ × 4-13/16″ × 4-3/16″)

Weight: 350g (12-3/8 ozs) without batteries
450g (15-7/8 ozs) with batteries

Subject to change without notice.
(All data are based on Canon's Standard Test Method.)

MEMO

OTC Ltd, 24 Market Place, Hatfield, Herts, AL10 0LN
Tel: 01707 273773 Fax: 01707 273774 Email: sales@otcworld.co.uk www.otcworld.co.uk